

Application No.: 09/737,536

REMARKS/ARGUMENTS

Applicants have amended Claims 1, 10, 13, 17, 19, 21 and 22 to more particularly point out the claimed invention.

Applicants have amended Claim 19 to recite "The computer software product of Claim 10 further comprising a computer program code for combining first plurality and second plurality of intensity values if said p-value is greater than a significance level."

Applicants assert that that no new matter has been introduced by the present amendments and entry of the same is respectfully requested.

A. Rejection under 35 U.S.C. 112, first paragraph

Claims 1-31 are rejected under 35 U.S.C. 112, first paragraph, for alleged lack of enablement. Applicants respectfully disagree with the Examiner.

The Examiner alleges that the calculation of p value is an essential subject matter and therefore, it is inappropriate to provide support using incorporated materials.

Calculation and evaluation of p value for a Wilcoxon rank test is well known to one of skill in the art. The theory and practice of Wilcoxon's rank test are described in numerous textbooks, including those that are incorporated by reference in the specification. In addition, the specification provides sufficient directions and specific examples. A patent need not teach, and preferably omits, what is well known in the art. Therefore, Applicants respectfully submit that an amendment to include the material incorporated by reference is not needed. This rejection under 35 USC 112 should be withdrawn.

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B. Rejection under 35 U.S.C. 112, second paragraph

Claims 1, 10 and 21 are allegedly indefinite for reciting A and B as superscript for symbol of intensity values. For purpose of clarity, Claims 1, 10 and 21 have been amended to recite "A method for comparing a first microarray spot A with a second microarray spot B comprising" to clarify that A and B correspond to the first and second microarray spots. Therefore, Applicants respectfully request that this rejection for Claims 1, 10 and 21 to be withdrawn.

Claims 1, 10 and 21 are allegedly indefinite for reciting "i" and "k" in symbols for intensity values without defining of what the metes and bounds of these parameters are. Applicants respectfully disagree with the Examiner. References to "i" and "k" may be found, for example, on page 23, lines 15 and 16 of the Specification. The Specification clearly teaches that the hybridization of each probe with the labeled nucleic acid sample is reflected by several pixel intensities. Therefore, in S^A_i , "i" is the i-th pixel intensity value for first microarray spot A wherein $i=1, \dots, n$ and n is the size of S^A . Similarly, in S^B_k , "k" is the k-th pixel intensity value for second spot B, wherein $k=1, \dots, m$ and m is the size of S^B .

In summary, Applicants respectfully submit that for the above reasons, the claims rejection under 35 U.S.C. 112, second paragraph, should be withdrawn.

C. Claim rejection under 35 U.S.C. 101

Claims 1-31 have been rejected as allegedly being directed to a non-statutory subject matter. The Office Action asserts that the claims are drawn to computation

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without any physical process and point to the "Computer-Related Inventions" section of the MPEP, Part IV, Subpart B.

Applicants respectfully disagree. In *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374,-75, the Fed Cir. concluded that "Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful'." In *State Street Bank*, the Fed Cir. held that "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades."

In *ATT Corp. v. Excel Comm. Co.*, 172 F.3d 1352, 1361, further clarified the issue of mathematical algorithm exception by concluding that "[t]he *State Street Bank* formulation, that a mathematical algorithm may be an integral part of patentable subject matter such as a machine or a process if the claimed invention as a whole is applied in a "useful" manner....[emphasis added]" The Fed. Cir. also held that patent claims reciting method of indicating telephone call recipient's primary interexchange carrier as data field was a patentable subject matter, as process applying Boolean principle to produce useful, concrete and tangible result.

Applying the *State Street* and its progenies to the rejected claims, Applicants respectfully submit that the instant claims are directed to the comparison of two microarray spot intensities. As stated in the Specification, the comparison of probe

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intensities at each cDNA target location is an important part of microarray data analysis such as analysis of gene expression profile (Page 21, lines 13-22 and Abstract). The claimed process produces concrete and useful results.

The Office Action alleges that "the instant claims are directed to non-statutory subject matter without requiring performance of a result outside of a computer type computation. Thus, the manipulation of data or conversion of data, in this case intensity values, is the claimed subject matter without any physical transformation beyond that of a computation." Office Action, page 5. Applicants respectfully submit that the Fed Cir. in *ATT Corp.* specifically rejected physical transformation as an invariable requirement and held that patent claims containing mathematical algorithms need not involve physical transformation to be deemed patentable subject matter: "the notation of "physical transformation" can be misunderstood. In the first place, it is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application." *ATT Corp.*, 173F.3d 1358.

Therefore, because the rejected claims are directed to a process that produces useful, concrete and tangible result in the microarray and biotechnology field and thus are directed to a patentable subject matter, this rejection of Claims under 35 USC 101 should be withdrawn.

D. Objections to the Specification

The Examiner has noted that blanks are present on page 17 and page 22. Applicants have amended pages 17 and 22 of the Specification to fill the blanks with the corresponding application numbers.

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The Examiner has objected to the Specification because it contains embedded hyperlink and/or other form of browser-executable code. Applicants have amended page 13, line 20 of the Specification to delete embedded hyperlink and/or other form of browser-executable code, thereby obviating this objection.

CONCLUSION

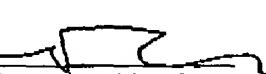
For these reasons, Applicants believe all pending claims are now in condition for allowance. If the Examiner has any questions pertaining to this application or feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 731-5000.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account 01-0431.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

Date: 7/29/04

By 
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